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SCIENCE NEWS LETTER

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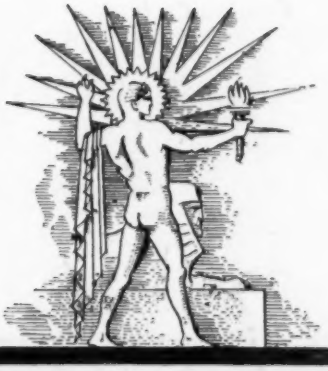
THE WEEKLY SUMMARY OF CURRENT SCIENCE •



June 13, 1942

To Push a Ship

See Page 374

A SCIENCE SERVICE PUBLICATION

Do You Know?

An airplane requires from 86 to 180 pounds of *rubber*.

Modern four-engined bombers require some 300 *instruments*.

Among African Negroes, the wandering *barber* is still a surgeon.

A milch *cow* requires as much care in a year as an acre of apple orchard.

A *cork tree* must grow for 15 years before its bark is ready for "stripping."

Bath sponges have a skeleton of spongin which is chemically related to silk.

The California *flying fish* can attain a speed of 35 miles per hour on the take-off.

Waste collected from British kitchens provides monthly 12,000 tons of feed for poultry, pigs and rabbits.

Tadpoles fail to transform into frogs if kept in water with no trace of iodine, and fed upon a diet free from iodine compounds.

Four-leaf clovers by the million are the unusual crop harvested in Panama from seeds developed by an engineer-turned-floriculturist.

Gas used on a hundred-mile auto jaunt will drive seven "jeeps" with seven guns and 21 fighting men 20 miles closer to the enemy.

Typhoid germs may live as long as 60 days in shell oysters.

The spawning grounds of the *tuna fish* have never been discovered.

Quillay, or *soap bark*, is used to produce foam on nonalcoholic carbonated beverages.

There were 365,377,000,000 cubic feet of gas burned in the manufacture of *carbon black* in 1941.

Over 100 species of *insects* have been found living in termite nests.

Plastic water faucets have been adopted by the Army to replace critical brass.

It takes about 250 flying hours to train an air corps pilot, and 12,500 gallons of *gasoline*.

One hundred thirty cities were without a single *traffic* fatality in 1941, according to the National Safety Council.

Question Box

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Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

SCIENCE NEWS LETTER

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MEDICINE

Artificial Fever Reduces High Blood Pressure

Induced By Certain Chemicals or By Triple Typhoid Vaccine, It Will Reduce Pressure But Is Not Cure

FEVER artificially induced by certain chemicals or by triple typhoid vaccine will significantly reduce blood pressure, particularly in patients suffering with high blood pressure, Dr. Herbert Chasis, Dr. William Goldring and Dr. Homer W. Smith, of New York University College of Medicine, announced at the meeting of the American Heart Association in Atlantic City.

Repeated doses of the fever-inducing substance will keep the blood pressure at lower levels, even when the fever itself is kept from developing by first giving amidopyrin. The treatment, however, cannot be called a "cure" since it does not correct the fundamental process that causes the high blood pressure, the New York physicians found.

The substances used besides the triple typhoid vaccine were a kind of sugar called inulin and tyrosinase, the enzyme that blackens potatoes which had previously been reported as a blood pressure reducing chemical. None of these caused any harm so far as could be observed, but they must be used cautiously. This was shown by the alarming experience with one patient whose blood circulation was slowed down so far that she became unconscious following treatment with the triple typhoid vaccine.

The blood pressure lowering effect of the fever-inducing substances, the New York doctors believe, is the result of an "adverse" reaction of weakness on the part of the heart and blood vessels.

The practical value of the results of the treatment was not the discovery of a new remedy for high blood pressure but the new light thrown on the action of other remedies that might at first seem to be effective in treatment of this condition. They may owe their apparent effectiveness as high blood pressure remedies, it now appears, to the fact that they are contaminated with common bacteria related to the typhoid fever group of germs. These germs and substances from them may cause fever and may also reduce blood pressure. The chances for blood pressure reducing remedies becoming contaminated with these germs are plentiful. The New York doctors point out that such contamination must be ruled out before the remedies themselves can be credited with reducing blood pressure.

Science News Letter, June 13, 1942

More Common in Women

HIGH blood pressure, one of the unsolved medical problems today, is more common in women but more serious in men, Dr. R. L. King, Dr. Thomas Carlile and Dr. J. M. Blackford, of the Mason Clinic, Seattle, told members of the American Heart Association.

Among 794 patients found to have high blood pressure in general examinations given between 1924 and 1930, the women predominated in a ratio of 3:2. However, twice as many women as men were living 10 to 16 years later.

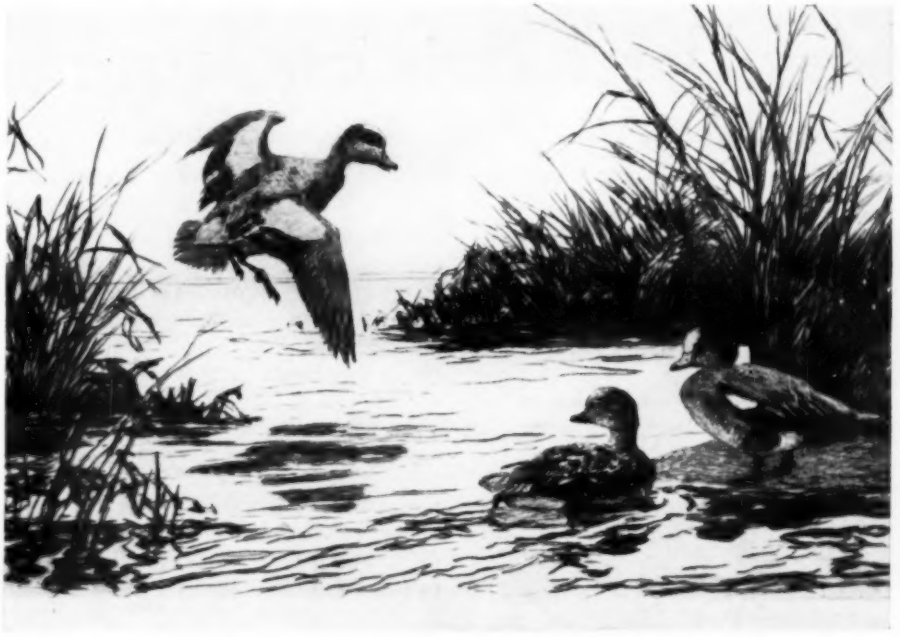
Of the total group followed up 10 to 16 years later, 128 or a little over one-fourth, were still living, with 353 dead. Fourteen lived 15 years or longer after their high blood pressure was first noted.

Heart failure caused twice as many deaths in this group as any other single cause. Heart enlargement may occur in high blood pressure patients in a relatively short time, the Seattle doctors observed. This depends for the most part on how high the blood pressure is and how long it remains high.

The influence of high blood pressure on the expectation of life is "striking," they said. Men 40 to 45 years old, with a life expectancy normally of about another 25 years, lived only about five years longer.

The seriousness of the outlook for high blood pressure patients, the Seattle doctors said, is, in general, influenced by the height of the blood pressure, advancing age, and the presence of signs of progressing changes in the blood vessels, especially in the brain, heart and kidneys.

Science News Letter, June 13, 1942



1942 DUCK STAMPS GO ON SALE JULY 1

This year's Duck Stamp design, by the well-known wildlife artist A. Lassell Ripley, features the American widgeon. A pair are shown in typical habitat surroundings, with a second drake about to alight on the water. These stamps, which go on sale July 1 at all first and second class postoffices, are much in demand by collectors as well as by hunters, who must show them on their licenses if they are gunning for migratory waterfowl. Ninety per cent of all money raised by their sale, added to other funds, goes toward the purchase of land for new wildfowl refuges.

Cause of Fainting Traced

CAUSE of the undue fatigue, shortness of breath, dizziness, fainting and even distress or pain around the heart in patients with varicose veins of the legs is the pooling of the blood in the varicose veins, Dr. Earle M. Chapman and Dr. Erling Asmussen, of Massachusetts General Hospital and the Harvard Fatigue Laboratory, announced.

"In the aged and in those with known heart disease, the added burden from varicose veins may be enough to provoke severe symptoms," the Boston doctors stated.

Wearing elastic stockings or an operation to cut off the blood supply to the varicose veins relieves the symptoms.

The reason why the cause for the symptoms had not previously been recognized may have been because the symptoms usually are moderate in nature and seldom lead to actual heart failure.

The Boston doctors investigated the problem after examining a patient who was thought to have angina pectoris or some other kind of serious heart trouble. Careful examination disclosed no sign of heart disease but when the patient got off the examining table one of the doctors noticed the large varicose veins in her legs enlarging as they filled with blood. He suddenly had the idea that the pooling of the blood in these veins might have caused such a decrease in the amount of blood returned to the heart by the veins that there was a deficiency in blood flowing through the heart's own artery which would cause heart pain. This patient obtained relief by wearing elastic stockings on both legs.

Investigation then revealed that almost one-fifth of the patients with varicose veins, 47 out of 250, complained of undue shortness of breath that was relieved when they lay down. Studies of blood circulation in normal persons and those with varicose veins when changing from recumbent to standing posture confirmed the idea that the pooling of the blood in the varicose veins could interfere with the circulation enough to cause the heart pain and other symptoms.

Science News Letter, June 13, 1942

AERONAUTICS

Three Possible "Surprises" May Upset Aviation Race

Successful Gas Turbine, Practical Rocket Plane and Wing Structure That Would Prevent Turbulence Forecast

THREE aeronautical developments would upset the present more or less even military aviation race throughout the world—a successful gas turbine engine for airplanes, a practical rocket plane and the realization of an airplane wing structure that would prevent the air becoming turbulent as it flows over it.

Dr. Jerome C. Hunsaker, Massachusetts Institute of Technology aeronautical engineer and chairman of the government National Advisory Committee for Aeronautics, in talking to the Harvard War Institute listed these as the three possible developments that might with some rapidity spring a surprise.

It is known that engineers throughout the world have been working, attempting to achieve these objectives.

A gas turbine would be an escape from the very real task of lubricating ordinary internal combustion engines at very high temperatures, now a limit to efficient operation. Present engines waste a third of the gasoline's power in heat. Successful gas turbines operating on waste gases from diesel engines and the oil refining process have been perfected and are in use in Switzerland and this country. The gas turbine in the airplane would eliminate the cooling system and also allow operation at 10,000 to 12,000 revolutions per minute instead of the 3,000 of the present engines.

Rocket planes avoid all engines and propellers, the propulsion being given by the kick of the rush of the gases out of an orifice at the rear of the plane. The Italians have already flown a small rocket plane from Milan to Rome. Rocket propulsion would be particularly effective in the high altitudes where the air is rare because the rocket kick doesn't need air to operate.

Making air flow smoothly over an airplane wing so as to maintain its untroubled characteristics might reduce the resistance or drag offered by the airplane by half. This is a major problem that might make a big difference in the performance of airplanes in the future if it could be solved.

Science News Letter, June 13, 1942

AGRICULTURE

Rice Growing in Florida Promises A Major Crop

RICE growing in the Florida Everglades, started only last year as a small-scale effort to provide cheaper chicken-feed for hard-put poultry farmers, may develop into a new major agricultural industry, making good much or all of the loss of overseas sources of this important grain.

It was all started by J. A. Jamison, superintendent of schools for Martin County. A graduate of the University of Oklahoma, he was raised in the rice country of Arkansas. He has taught school in Oklahoma, Arkansas, Kansas and Florida.

When he came to Florida he saw that chicken raisers were having a hard struggle keeping out of the red, on account of the high cost of purchased feed from the Corn Belt and Argentina.

Rice makes chickens fat and hens lay. Why not grow rice in sub-tropical Florida?

It couldn't be done, he was told, it could never make a head. Finally he decided he would try, anyway. A pond of rice on every chicken man's place might bring millions to vast numbers of impoverished Floridians.

So last year he planted about an eighth of an acre with rice in a pond on waste land near Palm City, whose once flourishing citrus groves had been wiped out in the 1928 hurricane, and had gone back to jungle. The rice sprang up luxuriantly. He got a crop of 50 to 60 bushels to the acre.

This year Mr. Jamison set out 18 acres. He is trying out three varieties of rice. They are all doing well. The growth, knee high, is so thick you could almost walk on it. With luck, it will ripen in July.

With a rice scarcity threatening, Mr. Jamison visualizes thousands of acres in Florida being devoted to the cereal. On a large commercial scale rice would have to be grown where the water could be drawn off at harvest time so that mechanical reapers could get at it.

Science News Letter, June 13, 1942

PUBLIC HEALTH

Morale of Germans Will Break When Homes Are Bombed

Hungry and Tired All the Time, and Without Enough Physicians, They Would Like To Quit Right Now

THE GERMANS, hungry all the time and tired all the time by the combination of too little food and long hours of work, will break when there has been enough bombing of their homes.

This is the opinion of Dr. Howard D. Fishburn, U. S. Public Health Service, who just returned on the Drottningholm from Germany where he had been on official duty since September, 1938.

"I have heard Germans say that the thing that will get them is when there's been enough bombing of their homes," he declared in an interview immediately after reporting to Public Health Service headquarters at Bethesda, Md.

He explained that this is because home life means so much more to the Germans than to Americans. He doubts, however, whether there will be much difference between German and English morale under bombing so long as the bombing of Germany is confined to industrial centers.

Food is the biggest problem in Germany today, Dr. Fishburn declared. The Germans are not starving to death, he said, but they have lost the sense of well-being that comes with a full stomach. The population in general has been gradually losing weight under the food restrictions. The effect is otherwise not very noticeable in the appearance of those who were healthy at the beginning of the war, but the old people and those with chronic diseases have not stood the short rations very well.

He had personal experience of the food problem in Germany after being interned at Bad Nauheim with the American diplomatic group and newspaper correspondents. The food there, probably better than the average German gets, was "bad," Dr. Fishburn declared. He said that the most they got totaled about 1,800 calories a day per person and there were not many days in the week when the group got that much to eat. Nutrition standards call for 2,200 to 2,800 calories per day for a man doing sedentary work.

The effect of the inadequate diet at Bad Nauheim was quickly felt in a loss of energy. Some of the group who played softball once a week for amusement found themselves worn out after seven innings.

Food in Germany is rationed to the population according to the work each person does, those doing heavy work getting more. Hours of labor, however, are very long. Dr. Fishburn could not give exact figures, but told of one acquaintance met regularly on the bus in Berlin who would often say "I have to work 18 hours today."

A great shortage of doctors and of medicines exists in Germany. It is very difficult to get any vitamin preparations or any kind of medicines. All young doctors are with the Army. The Germans claim to have many synthetic substitutes for natural medicinal preparations, such as a synthetic iodine, but Dr. Fishburn seemed skeptical about these "claims."

No reports of the number of cases of disease or of the number of deaths in Germany were released after war started in 1939, so Dr. Fishburn had no exact information from such sources of the state of health in the country. Some increase in influenza and other diseases of nose, throat and lungs did occur, but there were no major epidemics.

There is typhus fever in several different localities in Germany, but Dr. Fishburn has no idea how much.

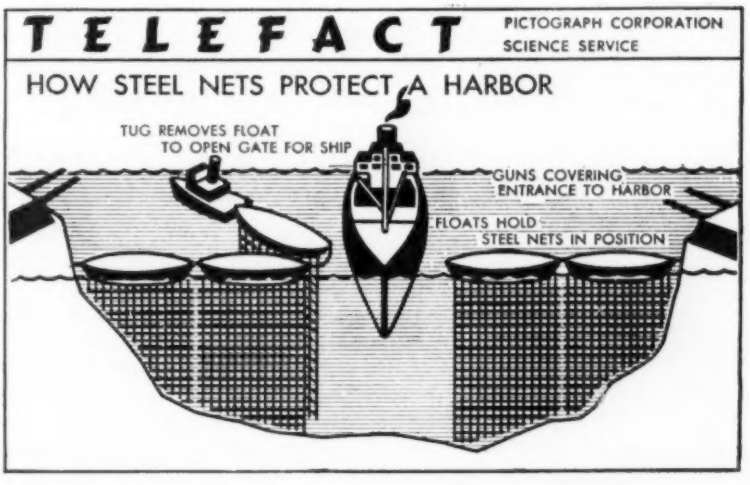
He and two other U. S. Public Health Service officers, Dr. Charles G. Spicknall and Dr. William S. Baum, were prevented from visiting certain prisoner-of-war camps because of typhus in those areas and consequent quarantine regulations. The disease flared up when the influx of Russian prisoners started and, according to hearsay, German soldiers on leave brought it back. The Germans are using a vaccine against typhus fever but Dr. Fishburn was unable to find out anything about what kind of vaccine it is or how effective it may be.

The Public Health Service officers had been assigned to inspection of the prisoner-of-war camps for the British and Belgians in 1941 when emigration from Germany to the United States stopped and relieved them of their work of examining aliens and enforcing U. S. quarantine regulations.

Conditions in these camps were satisfactory so far as housing and clothing were concerned, but the food furnished by the Germans was inadequate. This food was supplemented to some extent by packages from the British Red Cross and other organizations outside Germany.

The group did not see any concentration camps but Dr. Fishburn said he saw "lots of people with frozen feet and fractured skulls who had been in concentration camps," adding sarcastically that he did not know, of course, whether they received these injuries in the camps or after leaving them.

In spite of a shortage of soap and of material for clothing, the Germans still appear pretty clean and well dressed.


TELEFACT
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SCIENCE SERVICE
HOW STEEL NETS PROTECT A HARBOR
TUG REMOVES FLOAT TO OPEN GATE FOR SHIP
GUNS COVERING ENTRANCE TO HARBOR
FLOATS HOLD STEEL NETS IN POSITION

"The soap," Dr. Fishburn said, "is awful. They have a product they call soap which looks like a piece of clay and makes just about as much lather as clay would."

"The German people are very tired of the war," he stated. "They would like to quit right now but they feel they have to win or nothing will be left of Germany."

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NUTRITION

Meat For Fighting Men To Be Abundant Here

Beef Cattle Production Expected To Reach Highest Point in History Within the Next Two Years

MEAT for fighting men, and for the working civilian armies that back them up, will be produced in abundance in America, Secretary of Agriculture Wickard promises in his annual report. Well recovered from the twin curses of depression and drought of the mid-thirties, which necessitated liquidation of many herds and flocks, the livestock industry swings into the fighting line of total national effort with the trampling of many millions of hooves.

Beef cattle have shown a strong upswing from their depletion of the drought years. Total numbers are very nearly up to those of the peak year, 1934. Increases have been largest in the East and the Far West; the Plains region, hardest hit during the drought period, has not yet built up its herds to their former level. Despite an increase in slaughter of 6% or 7% over 1941, beef herds are still growing bigger, and it is anticipated that during the next two years they will reach the highest point in the history of the country.

Hogs are not expected to increase as rapidly as beef cattle. However, their number has been very high in recent years, with a resulting depression trend in price that has given the AAA considerable difficulty. Rising prices brought about by heavy purchases of lard and pork for export, as well as by increase in industrial consumer purchasing power, will have a stimulating tendency.

Sheep, like cattle, are at a high point. The 1941 lamb crop, 5% larger than that of 1940, was the largest on record. The year's kill was very large, with prices good. War-stimulated demand for wool, as well as the general uptrend in meat prices, should result in rapidly increasing flocks.

Particular emphasis has been placed on poultry and eggs, milk and other dairy products, in the war effort, both for the use of our own armed forces and working population and for lend-lease export to our Allies. Similar emphasis has also been laid on fruit and vegetable production.

Efforts will still be made to divert acreage from the big "surplus" crops—wheat, cotton, tobacco—into the growing of other things for which demand is not yet fully balanced by supply.

"Ideally performed, the agricultural task would give us what we need for our own consumption and for our allies and nothing else," Secretary Wickard points out. "It would suspend the production of surpluses. All misdirected effort in wartime is waste. We shall not attain the ideal, but we shall move toward it . . . History will judge us by what we do with what we have."

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PUBLIC HEALTH

Rats Are Costly Pests And a Danger to Health

ONE of the dangers on the home front that we must continue to fight is the menace of the rat. These animals can spread bubonic plague, typhus fever, infectious jaundice, rat-bite fever and food poisoning. The annual cost to the nation is $200,000,000, and to each family from $8 to $20, the Boston City Health Department states.

Anti-rat war plans follow three lines: 1. Starve them out, 2. Kill them; 3. Build them out.

To starve them out, store garbage in covered metal containers. Store food in covered containers of glass or metal. Keep floors, stairways, alleys, streets and backyards free from bits of food and garbage. Don't store garbage in uncovered paper or cardboard bags or boxes. Don't leave food for birds and pets where rats can find it. Don't store fruits and vegetables in cellars.

To kill rats, try to find the holes they use to enter the house and set traps there and other places where rats usually pass. Set several traps at a time, using different kinds of bait, such as meat, fish, vegetable, cereal or chocolate. Tie the bait securely on the trigger and don't let it become spoiled or rancid. Don't use rat poisons, since they can kill people, too, if eaten. Leave the use of poison gas to a professional exterminator who can handle it safely.

To build them out, keep the entire house free from rubbish, such as paper, sawdust, excelsior or old cloth that rats could use for nests. Stack wood, paper or boxes neatly on platforms raised at least 18 inches off the ground. Fill in all holes around wires or pipes with a mixture of plaster or concrete mixed with broken glass. Cover all holes with a piece of metal sheeting; a tin can beaten flat will often do. Check all doors and windows to be sure they fit tightly and replace or board over tightly all broken windows or doors. Clean drains of accumulated material. Fill up or block up all dead spaces in floors and walls whenever possible. Use cement, concrete, metal or brick instead of wood. Remember to ratproof garages, sheds and the like as well as the house.

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ENGINEERING

Great Ship's Propellers Are Delivered on the Dot

See Front Cover

THE huge manganese bronze propeller shown on the front cover of this week's SCIENCE NEWS LETTER will soon be on its way to one of Uncle Sam's many busy shipyards where ships are being put together from parts fabricated often at distant inland points. The propeller is about to leave the shops of the Cramp Brass and Iron Foundries Division of the Baldwin Locomotive Works at Philadelphia, where it was made.

Production at the Foundries has been stepped up for many months to meet the tremendously increased demand for propellers. Not a single ship has been held on the ways, said N. H. Schwenk, vice-president, awaiting delivery of propellers from the Cramp Foundries.

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Ants are the one important natural enemy of termites.

HEREDITY

Institute For Study of Human Heredity Proposed

Better Knowledge of How Physical Traits Are Handed Down Would Help Offset Ills Following Present War

A RESEARCH institute for the study of human heredity can and should be established, declares Prof. Earnest A. Hooton, well-known Harvard anthropologist. Better knowledge of the way physical and physiological traits are handed down from ancestors to offspring would, he feels, do a great deal to offset the ills that will be visited upon the human race as an aftermath of the present war.

Initial staff of such an institution would not need to be very large. Prof. Hooton proposes an animal geneticist, a physical anthropologist, a psychologist, a physiologist, a clinical physician, a biometric statistician "and a couple of realistic sociologists." Quarters for such an institution might be available at any first-rate medical school. All that is lacking is some philanthropist long-headed enough to endow an organization aiming at the long-range prevention of much human misery, instead of the mere relief of preventable disasters after they have arrived.

The institution would operate, as Prof. Hooton envisions it, by "locating the principals to imminent marriages, studying them from all of the scientific angles which are necessary for a full understanding of their organic and sociological capacities, and then extend that study so far as possible, to their parents, brothers and sisters.

"Next, the institute would await the arrival of the probably inevitable offspring of these marriages and would follow these through their periods of growth and maturity. The research staff of the institute would not have to twiddle its thumbs until the infants grow up. Neither births nor marriages are uncommon."

An animal analogue of one phase of such a study has been provided by the important but little-noticed breeding experiments with rabbits, carried on for many years by Dr. Wade H. Brown and his associates at the Rockefeller Institute for Medical Research at Princeton, N. J. It might be called an experiment in horrible examples, for Dr. Brown and his staff have mated their rabbits as human beings all too often mate themselves: in such a way as to combine and intensify hereditary constitutional weaknesses. Some of these weaknesses manifest themselves as deformities, others as diseases that "run in the family."

If analogous human hereditary deficiencies could be detected and their bearers discouraged from making the kind of marriages that would pass them on to their luckless offspring, Prof. Hooton feels, the cost of the institute which he proposes would be justified many times over.

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PSYCHIATRY

"Cranks" Visiting Washington Are Mostly Harmless, Quiet

THE "CRANKS" who so regularly appear among the visitors thronging Government offices in Washington, although potentially the most dangerous of all mentally ill patients, are, with few exceptions, harmless, quiet and well behaved.

A study of these psychotic visitors to Washington who have been sent for treatment to St. Elizabeths Hospital was reported to the American Psychopathological Association meeting in Boston. The study was made by Dr. Jay L. Hoffman, of St. Elizabeths, who was, however, unable to read his report in person because he was reporting for duty with the Army.

Coming to Washington with weird demands for absurd sums of money, for impossible "rights" or to advise Government officials on how to win the war, these men—and they are nearly all men—seek public officials because of mental illness developing out of loneliness, friendlessness, and hunger for happiness. Their demands and their offers of advice, Dr. Hoffman said, serve to make up for their poor adjustment at home, at work, and in the community.

"These patients are, in general, a pitiful lot," he reported. "They are frequently of foreign birth or extraction, without friends or family, well along in years, wanderers, unemployed, and completely unaware of the abnormality of their ideas and behavior.

"One may search the stories of their lives without finding much cause for happiness or satisfaction."

About half come to Washington in the hope of seeing the President. Others want to see the Secretary of the Treasury, the Secretary of the Navy, officials in the Department of Justice, FBI, or Secret Service, the Supreme Court, Veterans Administration, and the Patent Office or their Congressmen and Senators. Only one in the group studied asked for the Vice-President.

Usually they want to get money, give advice, or obtain relief from imagined persecution.

One woman, a factory worker, demanded $300,000,000 which she said had been loaned to the English Government by her family and which Queen Mary had brought to this country for her. One man wanted a patent on a flame-thrower which, he claimed, could destroy all the enemies of the United States. Two claimed that they had been elected President of the United States and wanted to be sworn in.

Although the age of the patients ranged all the way from 19 years to 70, most of them were over 35 years and the average age was 44. Only five out of 53 were married. Frequently there were no relatives or friends sufficiently interested in the patient to respond to correspondence from the hospital. A number had been raised in orphan asylums or foster homes. Most of those of foreign birth had no relatives in this country.

Science News Letter, June 13, 1942

Strawberry juice retains more vitamin C than do preserves or jam made from the berries.

A bacterial *parasite* of the red scale which attacks citrus fruit has been discovered.

STATISTICS

Girl's Chances to Marry Halved by Age of 30

AN AMERICAN girl's chances of eventually getting married are 90 out of 100 at the age of 15 years. At double that age, her chances are just one-half as good. Up to the age of 22 years, the girls have a better chance of marrying than the boys. After that age, the men's chances are better until the age of 45 years is reached. At that age, the remaining chances of eventual marriage for the confirmed bachelor or spinster are about one in 10.

These figures are from the Metropolitan Life Insurance Company, which points out that the marriage rate in the United States has for many years past been the highest of all the leading nations of the world. In the past two years it has increased materially and suddenly "through circumstances related to the outbreak of the war."

A prolonged war, however, will tend to decrease the chances for eventual marriage, especially for women. The situation will be further aggravated in the event of heavy war casualties with resulting disturbance in the ratio of men to women of marriageable age. This occurred to a very serious degree in some of the warring countries after the last war.

Science News Letter, June 13, 1942

MEDICINE

Spread of Burning Bush Brings New Sneeze Trouble

MORE sneezes and other trouble for hay fever sufferers this summer are expected by Dr. O. C. Durham, chief botanist of the Abbott Laboratories, North Chicago, Ill.

He warned members of the American Association for the Study of Allergy meeting in Atlantic City to be on guard against new sneeze trouble from the pernicious weed known as Mexican fireweed, burning bush, fireball, firebush, and summer cyprus.

The weed is now rampant in Iowa, Nebraska, and Colorado and is threatening adjacent states. It has been found as far east as Detroit and as far south as St. Louis. For many years small colonies have been found from time to time along the Atlantic coast. It did not come from Mexico, in spite of one of its aliases, but from southern Europe or Asia, Dr. Durham declares. It may have gotten its start as a weed pest by reversion from a cultivated variety commonly used as a decorative plant under the name summer cyprus. Botanical name for the weed is Kochia scoparia.

The acreage of the weeds in the newly infested areas so far is more impressive than the output of pollen, but it takes only a small amount of the pollen to cause a great deal of suffering, Dr. Durham reports.

This weed may drive out some of the ragweed which causes so much hay fever suffering, but, says Dr. Durham, even if it "should succeed in replacing as much as half of the acreage of ragweed in the farming area of the Mississippi Valley, the reduction of the ragweed content of the air could probably hardly be noticed by ragweed sufferers.

"An appreciable volume of a new and unrelated air-borne allergen in that area would certainly complicate a difficult situation."

Science News Letter, June 13, 1942

MEDICINE

Hidebound Skin Ailment Affects Entire Body

SCLERODERMA, the strange hidebound condition of the skin sometimes seen in "the man who turned to stone" of the circus sideshows, is a disease affecting the entire body and not just the skin, Dr. A. Wilbur Duryee and Dr. Irving Leinwand of New York Post-Graduate Medical School, Columbia University, told members of the American Heart Association and the American Therapeutic Society at Atlantic City.

Brain wave records, the first ever taken on such patients, showed abnormal tracings in a high percentage of cases. It is possible these reflect injury or disease of the blood vessels of the brain, although no definite conclusions on this point can be made yet.

The blood vessels, and not the skin, are where the trouble begins, in the opinion of the New York investigators.

The outlook in scleroderma is more serious than is usually believed, they state. No specific treatment has yet been discovered. Thyroid and female sex hormone extracts, vitamins C and B, and mecholyl iontophoresis to increase blood flow to the affected parts of the skin are preferred methods of treatment. All possible factors that could cause inflammation of the arteries or spasm of the blood vessels, such as heavy metals, arsenic, tobacco, ergot and allergens of various kinds and mechanical injury, should be eliminated if possible.

Science News Letter, June 13, 1942

IN SCIEN

ENGINEERING

Three More Big Generators Building for Grand Coulee

WORK has started on three more 108,000-kilowatt Westinghouse generators, largest in the world, for the Grand Coulee Dam to power aluminum plants and other war industries in the Pacific Northwest.

Three others of the giant units have been under construction since last August, and three are already installed at the dam.

Each generator, big as a house, is 24 feet high, 45 feet in diameter, and weighs 1,000 tons. Thirty-eight freight cars are required to transport it in pieces to the dam. The largest single piece weighs 75 tons. The 74-foot shaft weighs 153 tons and is transported in three pieces.

Ultimately Grand Coulee will have 18 of these 108,000-kilowatt generators, making it the world's largest power plant.

Science News Letter, June 13, 1942

STATISTICS

Length of Life in U. S. Doubled in Six Decades

THE AVERAGE length of life in America, at least among wage-earners and their families, has almost doubled during the past 60 years, the Metropolitan Life Insurance Company announces.

Average length of life today, just computed on the basis of mortality among the Company's industrial policy holders in 1941, is 63.42 years. During the period 1879 to 1889 the Company's early records show that the expectation of life for a one-year-old baby was 40 years. But deaths among infants were very much more frequent in those days than now. From other records relating to that time it is known that the expectation of life at birth, or the average length of life, was about 34 years, only a little over half what it is now.

The average industrial policy holder 35 years old today still has as many years of life before him as the baby in the wage-earning family of 1879 to 1889.

Science News Letter, June 13, 1942

NE FIELDS

MEDICINE

Sulfa Drugs Are Used For One Heart Disease

NEW HOPE for patients with a kind of heart disease hitherto "almost universally fatal" now comes from sulfa drug treatment of the disease, according to a report by Dr. Carter Smith, Dr. H. Cliff Sauls and Dr. Charles F. Stone, of Atlanta, Ga. (*Journal, American Medical Association,* June 6.)

Subacute bacterial endocarditis due to the germ, Streptococcus viridans, is the form of heart disease now being conquered by sulfa drug treatment. Before the advent of the sulfa drugs, best recovery rate from this heart trouble was one in 100. Today a combination of sulfa drug treatment with injections into the veins of a typhoid vaccine has raised the recovery rate to 20 in 100 cases. The typhoid vaccine is given to induce fever which is believed to help the sulfa drugs attack the bacteria causing the condition.

Importance of giving the drug early in the disease is stressed by the Atlanta physicians in reporting two more cures by this treatment.

Science News Letter, June 13, 1942

PHYSIOLOGY

Use Feet as Levers, Not as Pedestals

IN THESE days when all of us will be walking more than ever, it is important to remember that feet are meant to be used as propulsive levers, not as pedestals. If you use your feet only as pedestals to support your body at each step, you will be stiff-gaited, instead of walking with the springy step of youth. Moreover, you will have to throw your leg forward with every step in order to move forward, a procedure which involves a twist of the pelvis with every step and puts a strain on the lower back.

Knees and big toes should be used in walking. Before the forward foot is placed on the ground, the knee of the rear leg should be fully straightened and the front part of this foot including the big toe should give a push to start it on its next step. In the normal stride, the muscles on the inner side of the calf, knee and thigh are also used to give this springy, forward push. Failure to use these muscles results in the unshapely legs seen on any beach—legs with muscles bulging on the outer side and so flattened from disuse on the inner side as to give a bowlegged appearance.

The knees also should be fully straightened in standing, so that the weight of the body can be transmitted through the bony column of the legs to the heels instead of onto the forefeet. In standing, most of the weight should be borne by the heels.

In walking, on the other hand, most of the weight should be borne on the forward part of the foot. If your heel feels a jar at every step, you are not walking correctly. The person who has lost the spring to his walk and walks on his heels holds himself perpendicular or leans over backward to maintain his balance. The result is "a very great tendency to develop a pot belly," even if the person is thin, Dr. Thomas Hale, Jr., points out in a report to *The Military Surgeon.*

In correct walking, with the weight carried on the forward part of the foot, the person leans slightly forward and must tense his abdominal muscles slightly to keep his balance.

Science News Letter, June 13, 1942

MICROBIOLOGY

Virus-Stopping Substance Found in Yeast Extract

WAR AMONG the microbes has extended to a new front. Discovery of a substance in yeast that destroys the disease-causing power of a plant-mosaic virus is reported by Dr. William N. Takahashi, University of California plant pathologist. (*Science,* June 5) This goes along with recent discoveries by other workers that certain bacteria can be killed by substances secreted by other bacteria and by molds—except that the virus units are sub-bacterial in size, and may not even be living organisms.

After heating and chemical extraction from a large quantity of yeast, the new virus-stopping substance was added to active virus extracts from sick plants. Subsequent inoculations of the treated virus into leaves of healthy plants failed to produce symptoms of mosaic, while control inoculations of untreated virus were followed by development of mosaic.

Chemical analysis of the new virus-stopper has not been completed, but preliminary work indicates that it may be a polysaccharide, or complex sugar.

Science News Letter, June 13, 1942

PHYSICS—MEDICINE

Ways for Protecting Radium Recommended by Bureau

METHODS of protecting radium during an air raid so that it will not be scattered by a bomb explosion have been recommended by the National Bureau of Standards.

The rules were drawn up by a committee of doctors, engineers and scientists, appointed by Dr. Lyman J. Briggs, director. They aim at safe storage of the radium with maximum protection and minimum interference with use. The committee advises extra precautions for 500 miles inland.

Science News Letter, June 13, 1942

MEDICINE

Nervous System Frequently Injured by Sulfa Drugs

A WARNING that the nervous system is frequently injured by the sulfa drugs and a prediction that the safe limit in potency of these may have been reached appear in the *Journal of the American Medical Association* (June 6).

All members of the sulfa drug family have a poisonous effect on the nervous system, the parent substance being the least poisonous and some of the newer sulfa drugs the most poisonous, Dr. Sam C. Little, of the University of Michigan Medical School, reports.

"It is possible," Dr. Little predicts, "that the synthesis of new multipotent derivatives (of the sulfa drugs) will be brought to a standstill by the disappointing discovery that the more toxic these drugs are to bacteria the more toxic they are to the human cell."

Among the conditions reported as due to use of the sulfa drugs are: loss of ability to speak and to write; stammering; toxic psychosis; peripheral neuritis; encephalomyelitis; optic neuritis; transitory myopia; meningeal signs; blindness and convulsions.

The drugs apparently are more likely to injure the nervous system when it has already been diseased.

One case of the serious mental sickness, schizophrenia, appears to have been precipitated by sulfanilamide.

Some of the damaging effects of the sulfa drugs on the mind and nervous system, it was suggested to Dr. Little by Frederic Schreiber, probably depend on the brain's being deprived of oxygen because hemoglobin, which carries oxygen in the blood, attaches itself more readily to the sulfa drugs than to oxygen.

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MEDICINE

Hope for Polio Victims

Sister Kenny Treatment To Help Rescue From Crippling Those Stricken With Infantile Paralysis this Summer

By EDWIN D. NEFF

WITH ANOTHER summer at hand every parent is anxious to learn what new hope in prevention and treatment medicine can offer against the danger of infantile paralysis.

Answers to questions most often asked about this disease will bring you up to date:

What Is the Most Important Recent Development?

Undoubtedly, the "Sister Kenny" treatment, named for its inventor, Miss Elizabeth Kenny, an Australian nurse ("Sister" is a title for nurses in the British Empire). The usual treatment for paralyzed limbs of infantile paralysis patients is immobilization with splints and braces. Miss Kenny substitutes carefully guided exercise, exactly the opposite. That her results are excellent is attested by reports on two series of infantile paralysis patients in a recent issue of the Journal of the American Medical Association. The National Foundation for Infantile Paralysis has approved her methods.

What Is the Kenny Treatment?

It is a three-stage technic which begins with hot, moist flannels applied to the painful, contracted muscles.

First and most dramatic effect is the relief from pain. When warmth has relaxed the muscle, skillful manipulation of the limb is begun by an operator who knows the human muscle system as a professional pianist knows the keyboard. Eventually, the patient himself is allowed to practice moving the limb until he can use it without help. Only early cases are given the Kenny treatment. When the treatment is begun in time, the typical crippling deformities of the infantile paralysis are avoided, and smooth coordinated movement of the limb is again possible.

The "swimming" treatment, or underwater exercise, is different from the Kenny method in that it is given to late cases. After the limb has been immobilized with splints or braces to give perfect rest, warm water is an excellent medium in which to increase joint motion without discomfort.

The "swimming" treatment at the Georgia Warm Springs Foundation is given as part of an extensive program. A recent report of experiences at Children's Hospital School, Baltimore, Md., states that "if a child has recovered sufficiently so that the weight-bearing muscles have above 70% of their normal power and are well balanced, walking in water furnishes an excellent means of beginning activity without danger of strain."

Miss Kenny began her methods in the Australian Bush, where doctors were many miles distant. She had her first success in 1910, and immediately attempted to get medical recognition. Because her methods differed so sharply from the standard methods, they were coolly received. As recently as 1938 an Australian Medical Commission condemned the method completely in every detail. In March of 1940 Miss Kenny came to America. Today her treatment is believed by many physicians to be the treatment of choice in early cases of infantile paralysis.

Is the Kenny Treatment Generally Available?

Not yet, but the National Foundation for Infantile Paralysis will undertake to send trained physicians and nurses to any community which suffers a serious outbreak. It is now training physicians, nurses and physiotherapists in various phases of the treatment. These three groups will train others in their home communities. Information about the treatment in your community can be had from your local health department, your chapter of the Foundation, or the local medical society. Do not try to give the treatment yourself without a doctor's advice.

The National Foundation is able to provide this training because it is backed by funds given by hundreds of American communities in donations and in subscription to President Roosevelt's Birthday Balls. Since its organization in January, 1938, $2,702,009.79 has been left with individual chapters throughout the

OLDER WAY

Exercising under water, as demonstrated in the pool at famous Georgia Warm Springs Foundation, is still good practice for late cases.

NEW TREATMENT

How the splintless treatment is applied to child is shown by Sister Kenny (nurse at right).

country. Research grants totaling $189,525.25 have been recommended for this year by the Foundation's medical advisory committee. To train more persons in methods of treatment, particularly the Kenny method, grants totaling $50,120 have been recommended. For research into improved methods for prevention and treatment of crippling after effects of infantile paralysis, grants totaling $41,290 were recommended, and another total of $98,115.25 for research into the nature of the infantile paralysis germ.

What Causes Infantile Paralysis?

A germ so tiny it will pass through fine-grained porcelain filters. After this germ, or virus, enters the body it attacks the central nervous system, possibly other nervous systems and even the muscles themselves. It sometimes causes paralysis, but not always. Some cases are so mild neither physician nor patient suspect anything. Little is known about the virus, and so far no cure for the disease it causes is known. The Kenny treatment is not a cure, but according to report it does reduce deformities if begun early.

Compared to a common childhood disease such as diphtheria (15,536 cases in 1940), infantile paralysis is relatively rare (9,826 cases, 1940). But the fatality rate among those who do have it, is just as high. It kills one patient for every ten patients reported, while diphtheria kills one patient in eleven reported. However, these figures probably overestimate the fatality rate of infantile paralysis and underestimate its occurrence, because there are many mild cases which are not recognized at all, or are mistakenly reported as other diseases. About 75 per cent of reported cases develop paralysis. When treatment is begun early, many of these patients recover with little or no disability.

How Is Infantile Paralysis Spread?

Two theories are getting the most attention. One holds that insects, flies and mosquitos spread the disease among humans. The virus has been found in the bodies of flies trapped during an epidemic. Other studies indicate that infantile paralysis is spread by human contact. The U. S. Public Health Service inclines toward the latter theory. An interesting sidelight is the tendency of the disease to strike severely after exhausting exercise on the part of the victim. The exercise does not cause the disease, but may result in its striking more severely. How the virus enters the body also is unknown at present; the gateway may be the nose or mouth, possibly both.

What Can a Parent Do to Protect a Child from Infection?

There is evidence that this may be a filth disease, hence good sanitatary practice should be observed. Severe chilling during swimming is unwise. Authorities advise that tonsil operations and tooth extractions should be postponed if possible when there is an epidemic of infantile paralysis in the community. Likewise, the child should be kept from crowds during outbreaks or epidemics. The advice of a competent physician should be sought if the child has headache, fever, nausea and stiffness of joints—typical first symptoms of infantile paralysis.

What About Preventive Vaccines?

According to Dr. Thomas M. Rivers, director, The Hospital of The Rockefeller Institute for Medical Research, there is, at present, "no safe, efficient vaccine for human use." Whether there ever will be, says Dr. Rivers, is problematic. Many attempts have been made to vaccinate humans and monkeys. None has been successful. "Vaccination" to create immunity to a disease may be attempted by the introduction of the disease germ in small doses or in killed or weakened form into the body so that natural defensive forces are set in motion. Unfortunately, the virus of infantile paralysis does not act in this manner with any clear success.

Are Respirators (Iron Lungs) Useful?

When nerves which control the muscles used in breathing are damaged so that these muscles do not function, the respirator, or iron-lung, is consistently useful. Only in these cases, however, is the respirator consistently useful. It is occasionally helpful when the nerve centers of the brain which presumably control

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the rate, rhythm and depth of breathing, are disturbed. The respirator is rarely effective and sometimes harmful when the difficulty in breathing is caused by the collection of mucus or other material resulting from paralysis of the mechanism involved in swallowing, the mechanism which ordinarily keeps things from going down the "Sunday throat." Doctors stress that the iron lung is not a device of desperation. It is most useful in protecting the muscles of the many mild cases of paralysis.

The respirator is a motor-driven device which enables the lungs to take in and expel air with a minimum use of the muscles which normally perform this function.

A final word as to the seriousness of infantile paralysis is contained in the opinion of Dr. Josephine B. Neal, visiting neurologist of the Willard Parker Hospital, New York City, who points out that while infantile paralysis "is perhaps the disease most feared by parents, its seriousness is really over-estimated when one considers the following facts:" 1. The "undoubtedly" large number of light cases which cannot be accurately diagnosed, but which confer immunity (it may be that your child is so protected); 2. The large percentage of cases of the type where there is no paralysis; 3. Cases in which, though paralysis is present, if proper treatment is begun early enough, patients will recover with little or no disability.

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● RADIO

Saturday, June 20, 1:30 p.m., EWT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. George C. Vaillant, director of the University Museum, University of Pennsylvania, will speak about America's Anonymous Inventors, the Indians.

Tuesday, June 16, 7:30 p.m., EWT

Science Clubs of America programs over WRUL, Boston, on 6.04, 9.70 and 11.73 megacycles.

One in a series of regular periods over this short wave station to serve science clubs, particularly in the high schools, throughout the Americas. Have your science group listen in at this time.

GENERAL SCIENCE

Each College a West Point or Annapolis in Proposed Plan

System of Federal Scholarships Urged To Aid Officer Material Among Boys Financially Unable To Pay Tuition

TO MOBILIZE young men of college age most effectively for war service, a system of Federal military scholarships is being advocated by an educational group under the leadership of President James B. Conant of Harvard. Every major college would become a sort of West Point or Annapolis under this plan.

About 250,000 boys graduating from high schools each year would enter training at colleges and universities throughout the nation wih the aim of becoming officers in the immense army that the nation is organizing to win the war.

At present three plans are put forth by the Navy and the Army under which about 160,000 are expected to enter college to continue for a time their studies with some chance of becoming leaders in the military services. One of these is the Navy V-1 plan under which the boys are likely to stay in college for two years. The Army has two plans: the aviation cadet program now underway and the Army enlisted corps just announced.

Young men of 16 to 21 in college and about to go to college, President Conant finds, are "perplexed and bewildered" as to how they may best serve their country. They are told, on the one hand, that they may best serve by continuing their studies, while on the other hand, the Army and the Navy are undertaking active recruiting among them.

Pointing out that this is a problem of life or death with many of them, President Conant advocates that the young men and the colleges should be relieved of the responsibilities of making such decisions.

Neither should potential officer training by the colleges be limited to those whose parents have enough money to send them to college, it is argued. In many cases just as much ability exists among the 350,000 high school male graduates who do not go on to college as among the 250,000 who enter college.

The proposed plan would remedy the inequality of educational opportunity that now keeps many intellectually capable boys from going to college and, at present, taking the first step toward a military commission.

The proposed plan might apply to 100,000 young men each year and would cost about $100,000,000 a year to get started. Regional or state boards would be established to pick out the boys who would receive the scholarships and the training would take place at colleges near their homes.

In its present form the Federal scholarship plan would need Congressional authorization to be inaugurated and it would supplement the Army and Navy plans for those who enlist under the present training plans. Girls are not included in present plans.

President Conant announced the proposed plan at the Harvard War Institute for newspaper men.

Science News Letter, June 13, 1942

★★★★★★★★★★★★★

WYOMING

Fish in its mountain streams. Ride horseback thru its hills and canyons. Find Indian relics and marine fossils in this region of great historical and geologic interest.

The Patons welcome a limited number of guests at their ranch home in the Big Horn country. Cabins are comfortable, food good and horses gentle.

Write for illustrated folder with map

Paton Ranch, Shell, Wyoming

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SCIENCE CLUBS OF AMERICA

Sponsored by Science Service

1719 N Street, N. W. Washington, D. C.

Wanted: Future Faradays and Curies

ALL OVER AMERICA there are high school seniors . . . boys and girls . . . who have potential scientific ability and budding creative genius of a high order. These talents are latent . . . awaiting the opportunity for further development through higher education.

To provide this opportunity, Science Clubs of America, sponsored by Science Service, is now conducting an *Annual Science Talent Search* . . . made financially possible by Westinghouse. This Talent Search has three major objectives:

1. **To discover and foster the education of boys and girls who possess exceptional scientific skill and ability.**
2. **To focus the attention of large numbers of gifted youth on the need for perfecting their creative and research skill . . . as future contributions to winning the war and the peace to follow.**
3. **To help make the American public aware of the role of science in war and in the post-war reconstruction.**

High school seniors, who enter the Science Talent Search competition, must take special examinations in their local schools to determine their aptitude for science, and must submit essays and school records.

Each year, forty winning contestants are to be given all-expense trips to Washington, D. C., during July where they will meet some of the country's foremost scientists, visit scientific institutions, and take part in scientific programs. While at the Nation's Capital, these embryo scientists will be given additional written and oral tests.

Judges will then select the two most talented youngsters . . . a boy and a girl . . . who will be awarded Westinghouse Grand Science Scholarships of $2400 each. Additional Westinghouse Science Scholarships . . . each valued at $200 . . . will be given to eighteen contestants.

By aiding the education of these gifted boys and girls today, we hope to help develop the scientists of tomorrow who will lead the way in the advancement of research and engineering.

Westinghouse

WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY, PITTSBURGH, PENNSYLVANIA

New Machines And Gadgets

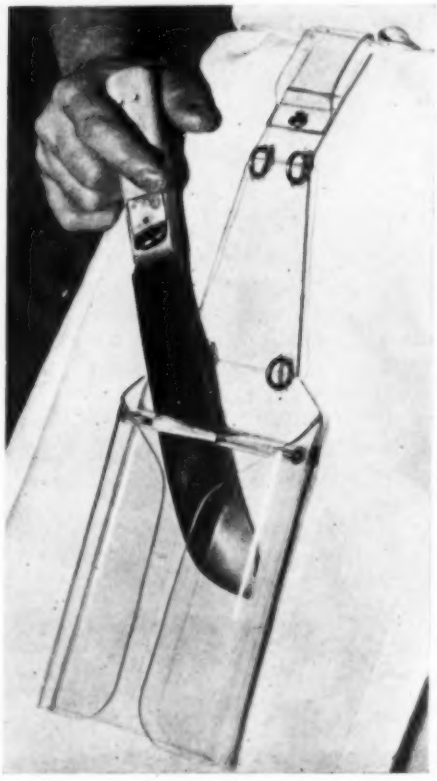
Novel Things for Wartime Living

Concrete highways are made more durable by mixing with the cement during the process of its manufacture small quantities (0.03 to 0.05%) of a dark-colored resin that is obtained from the wood of the southern longleaf pine. The resin is used in flake or pulverized form. The addition of this resin to the cement makes the highway less subject to "scaling" under the action of alternate freezing and thawing.

Soft ice, or at least softer than the usual variety in the sense of being less brittle, can be made by the simple expedient of bubbling a little carbon dioxide (soda water gas) through the liquid before freezing it. Ice manufacturers have been restricted in their output by the fact that if too low a temperature is used the ice is brittle and is likely to crack during the freezing process. The cracked cakes must be thrown away. One company, by using carbon dioxide, was able to lower the temperature 5 degrees and increase its output 30%.

Paint made from corn has been recommended for camouflage purposes. It is made in the form of a dry powder and can be transported in this state. To prepare for use it is mixed with pigment of the desired color, water and a little ammonia.

A break in an electrical circuit may be instantly indicated by a small neon light which goes on when the current goes off. The stoppage may be due to a broken wire, a blown fuse, a switch or a circuit breaker that has opened, or any other cause. Where there are many circuits, the device indicates at once which one is at fault. It has been widely used in railway signaling and in aircraft equipment. It is useful in connection with remote control to show whether distant motors are on or off.



Transparent plastic replaces aluminum as a knife sheath for packing house workers. Aluminum had previously been used because of its lightness, but the plastic is still lighter and is not breakable. Moreover the sheaths are made from scrap remaining from construction of airplane turrets and windows.

If you want more information on the new things described here., send a three-cent stamp to Science News Letter, 1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 108.

Science News Letter, June 13, 1942

More American children suffer from *dental decay* than from any other one disease, except the common cold, according to the American Dental Association.

Gasoline evaporates from your car when it is left in the sun.

SCIENCE CLUBS OF AMERICA

Sponsored by Science Service

NEWS OF CLUBS

PITTSBURGH, Pa.—A most outstanding and original radio program was featured recently on station KDKA. The stars in this broadcast were five high school Science Club members; each selected as a champion of a previously broadcasted "Junior Science Experts" feature. The program emanated from the Buhl Planetarium where the Junior Experts answered questions of a scientific nature which were submitted by educators, engineers, newspapermen and other scientists.

"The surprising feature of these programs," said Dr. Fitz-Hugh Marshall, curator of exhibits at the Planetarium, "has been the wide knowledge of all of the sciences which these youngsters have. They are good in all fields of science."

Starring on the broadcast were Donald Rose of Schenley High School; Leonard Lerman of Taylor Allderdice High; William Vaughan of Oliver High; James F. Kennedy, Jr., of St. Mary of the Mount High and Joseph Konrad of Central Catholic High.

"The Junior Science Experts program," says the Pittsburgh Press, "is a tribute to more than 100 boys and girls of the Pittsburgh region who are now showing science exhibits and demonstrations in the Junior Science Fair."

This Fair was sponsored by the Pennsylvania Academy of Science, the Press and the Buhl Planetarium. The Science Center is directed by John J. Grove of the Buhl Planetarium.

ROCHESTER, N. Y.—About 100 exhibits were displayed at the Third Annual Science and Engineering Fair of the Rochester Science Center. These exhibits were set up in the Rundel Building which houses the Rochester Public Library.

Those who have never visited a Science Fair will be interested in this brief report by Paul E. Smith, assistant in science, Rochester Public Schools.

"As you entered Rundel your attention was immediately caught by two kayaks (Eskimo boats) so large they were placed in the large reading room. Taking the elevator to the third floor where most of the exhibits were displayed you stepped out and almost into a home-made Link pilot trainer which went through all the motions of a real airplane. In the corridor was a model rayon manufacturing plant which actually produced rayon. On the platform in the auditorium was an automobile made out of everything except auto parts—and it ran. A girls' science club exhibited a display illustrating the manufacture of synthetic rubber. Another exhibit showed the working of a magnesium thermite bomb. For those visitors interested in first aid, there was a collection of dolls, each bandaged in miniature according to correct Red Cross procedure. There was a model water purifying system, an apparatus for a new method of manufacture of nitric acid, a complete exhibit showing inheritance in fruit flies, and another demonstrating the embryology of the chick. The boy who entered the inheritance exhibit knew he wouldn't be present when the judges inspected the Fair, so he provided a phonograph and a record of his own explanation which was played for the judges."

Clubs are invited to become affiliated with SCA for a nominal $2 for 20 members or less. You can become an associate of SCA for 25 cents. Address: Science Clubs of America, 1719 N St., N.W., Washington, D. C.

Science News Letter, June 13, 1942

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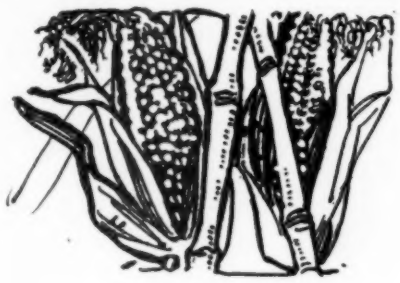
AGRICULTURE

NATURE RAMBLINGS

by Frank Thone



Food for Giants

MAN, it has more than once been pointed out, is relatively a giant among animals. We are so used to feeling small in the presence of whales and elephants, and short as compared with giraffes, that we tend to lose sight that only a few dozen animal species are bigger than we, as against thousands that are smaller.

Being big, we have favored big plants as food sources. Like all mammals we depend mainly on grasses for our nourishment, and we have made the giant grasses our own. In a world of plants most of whose members are ankle-high or at most knee-high, we have chosen those that reach a convenient waist- or shoulder-high level where we can get at them without too much trouble: wheat, rye, oats, barley, rice.

We have also gone after the biggest grasses of all, grasses that stand high above our heads: corn, millet, sorghum, sugarcane, bamboo. What we would have done had there been grasses even larger than these it is hard to guess. Very likely we would have ignored them. Although bamboos produce heavy crops of seed (although at infrequent intervals) they are not harvested for food to any great extent. The principal food use of bamboo is the Oriental practice of cooking the young shoots as an asparagus-like vegetable dish.

We even breed our tamed grasses to be convenient for harvesting at our own height. One of the points in producing new strains of corn is to have the ears between waist-high and shoulder-high to a man. And we strive against too-short straw in barley, too-long straw in rye.

If a plant insists on producing its edible parts near or below ground level, we in turn insist that it make them big enough so that we can get a meal without bending over too often. There are plenty of plants with low-growing or subterranean parts that are tiny but tasty, but we ignore them and go after potatoes, yams, turnips and onions. We breed berries to be bigger, bean-pods to be longer and fatter.

So resentful are we of such incurable low tendencies on the part of some plants, like beets and onions, strawberries and cranberries, necessitating much bending or going on hands and knees to harvest them, that labor sociologists have invented a special term of obloquy for them: "stoop crops." We would, if we could, grow them on tall stalks, so that tending them would not be beneath the dignity of upright-walking man.

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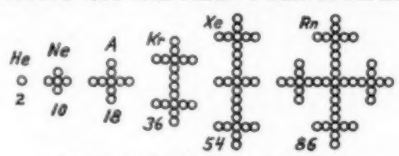
ESSAYS ON THE NEW VORTEX ATOM



Copyright 1940 by Carl F. Krafft

The author attacks the Rutherford-Bohr theory by exposing its many fallacies, but physicists seem to be unable to attack the author's vortex theory. Free upon request.

C. F. KRAFFT

312 N. Shafer St. Richmond, Va.

PHYSICS

Power of Matter To Attract Other Matter Is Remeasured

COMPLETION of a new measurement of the power of matter to attract other matter, known as the constant of gravitation, has just been announced by Dr. Paul R. Heyl, physicist of the National Bureau of Standards.

The new figures for the constant (multiplied by 100,000,000) are 6.673 plus or minus 0.003, as compared with the generally accepted value of 6.670 plus or minus 0.005, which was also obtained by Dr. Heyl at the Bureau in 1930.

The very small difference between the two values bespeaks the high accuracy of both measurements. That the new value is more accurate than the old is evidenced by the "probable error," 0.003 of the new value, as compared with 0.005 for the old.

This increase in accuracy, Dr. Heyl stated, was due to two improvements made in the apparatus, which otherwise was the same as that used in 1930. Many improvements were suggested and some were tried but only two adopted, Dr. Heyl said, and he believes that the limit of accuracy has about been reached and that any substantial further improvement will require that a radically different method be found.

The constant of gravitation may be defined as the force with which two particles of matter, each having a mass of one gram, attract each other when one centimeter apart. (A gram is the 28th part of an ounce and a centimeter is about 0.4 of an inch.)

Since, in the words of Newton, "Every particle of matter in the universe attracts every other particle. . . ," any two objects on the earth, of whatever material, should attract each other. They do, and this attraction is precisely what is used in determining the gravitational constant. But the force is so exceedingly small, as compared with that of the enormously greater earth which is evidenced as weight, that only an extremely sensitive instrument can detect or measure it.

This instrument has nearly always been a refined form of the torsion balance invented by Cavendish 150 years ago. It is a kind of pendulum whose time of swing is changed when the positions of two massive weights nearby are altered. It is very impressive to observe that when a bottle of mercury (which is very heavy) is removed from a nearby shelf and put somewhere else, the swing of the pendulum is altered.

Science News Letter, June 13, 1942

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•First Glances at New Books

PSYCHIATRY

SHELL SHOCK IN FRANCE 1914-18 — Charles S. Myers—*Cambridge (Macmillan)*, 146 p., $1.25. The diary of a Consulting Psychologist to the British Armies in France during the last war.

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NAVAL SCIENCE

SEA POWER IN CONFLICT—Paul Schubert—*Coward-McCann*, 252 p., $2.50. The first part of this book discusses general principles underlying naval construction and tactics, with compact accounts of the leading navies; the second part is a history of naval action in the present war, down to the end of 1941.

Science News Letter, June 13, 1942

MILITARY SCIENCE

THE TOOLS OF WAR—James R. Newman—*Doubleday, Doran*, 398 p., illus., $5. An up-to-the-minute account of all the weapons of war, from rifle and hand grenade to airplane, tank and battleship, popularly yet accurately written and excellently illustrated, with historical background going back deep into the Middle Ages. If you don't know anything at all about war weapons, you can get an adequate education from this one book.

Science News Letter, June 13, 1942

MILITARY SCIENCE

MECHANIZED MIGHT, The Story of Mechanized Warfare—Paul C. Raborg—*Whittlesey House*, 284 p., $2.50. Major Raborg knows his subject first-hand, from having worked with tanks and other armored vehicles for many years. He tells not only of the vehicles now in the American service but also of those of our allies and enemies.

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MEDICINE

THE BOND BETWEEN US, The Third Component—Frederic Loomis—*Knopf*, 267 p., $2.50. Experiences of an obstetrician written in popular style by the author of "Consultation Room."

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ECONOMICS

THE COMING SHOWDOWN—Carl Dreher—*Little, Brown*, 419 p., $3. A plea for a "democratic collectivism" by an engineer who wants to see productive energy devoted to the welfare of all the people.

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GENERAL SCIENCE

HANDBOOK OF SCIENTIFIC AND TECHNICAL SOCIETIES AND INSTITUTIONS OF THE UNITED STATES AND CANADA (4th ed.)—U. S. Section compiled by Callie Hull and Mildred Paddock; Canadian Section compiled by S. J. Cook and P. A. Howard—*National Research Council*, 389 p., $4. Approximately one-third bigger than the last edition, this book lists officers, history, object, membership, meetings, library and publications of organizations concerned with the natural sciences and technology. Invaluable for reference.

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• Just Off the Press •

AIRCRAFT INSPECTION—Ernest E. Wissman—*Whittlesey House*, 268 p., illus., $3.

ALCOHOL EXPLORED—Howard W. Haggard and E. M. Jellinek—*Doubleday, Doran*, 297 p., $2.75.

AUTOMOBILE TRANSPORTATION IN THE WAR EFFORT—Charles L. Dearing—*Brookings Institution*, 47 p., 25c.

GETTING THEM INTO THE BLUE—Ernest K. Gann—*Crowell*, 154 p., illus., $2.

HEREDITY, FOOD, AND ENVIRONMENT IN THE NUTRITION OF INFANTS AND CHILDREN—George Dow Scott—*Chapman and Grimes*, 778 p., $5.

INTRODUCTION TO PHYSICS—Harley Howe—*McGraw-Hill*, 559 p., Illus., $3.75.

THE LIFE OF FLORENCE NIGHTINGALE—Sir Edward Cook—*Macmillan*, 2 volumes in one, $4.50.

LIVING CHEMISTRY—Maurice R. Ahrens, Norris F. Bush and Ray K. Easley—*Ginn*, 545 p., illus., $2.28.

MACARTHUR ON WAR—Frank C. Waldrop, ed. *Duell, Sloan and Pearce*, 419 p., $3.

THE NATIONAL NUTRITION—Morris Fishbein—*Bobbs-Merrill*, 192 p., $1.75.

PERSONALITY AND MENTAL ILLNESS, An Essay in Psychiatric Diagnosis—John Bowlby—*Emerson Books*, 280 p., $2.75.

THE PHOTODYNAMIC ACTION OF DYES ON THE EGGS OF THE SEA URCHIN, LYTECHINUS VARIEGATUS—David Hilt Tennent—*Carnegie Inst. of Washington*, 153 p., 8 pl., $1.25 paper, $1.75 cloth.

THE PHYSICAL UNIVERSE—Brother August Leo and Brother Conrad Gabriel—*Manhattan College Book Store*, 311 lithoprinted p., illus., $2.75.

PROCEEDINGS OF THE HYDROLOGY CONFERENCE HELD AT STATE COLLEGE, PENNSYLVANIA, June 30-July 2, 1941—F. T. Mavis, ed.—*Pennsylvania State College*, 270 p., $2.

SEX GUIDANCE IN FAMILY LIFE EDUCATION, A Handbook for the Schools—Frances Bruce Strain—*Macmillan*, 340 p., $2.25.

TRAINING MANUAL FOR AUXILIARY FIREMEN—Horatio Bond, W. Fred Heisler and R. J. Douglas, eds.—*National Fire Protection Assn.*, 406 p., $1.50.

THE UNIVERSITY OF MICHIGAN, AN ENCYCLOPEDIC SURVEY, Part II, Organization, Services, Alumni—Wilfred B. Shaw, ed.—*Univ. of Mich. Press*, 202 p, $1.50.

MOLES, MICE AND LEMMINGS, Problems in Population Dynamics—Charles Elton—*Oxford Univ. Press* 496 p., $10.

GENERAL SCIENCE

WAR SERVICE BULLETIN—Science Clubs of America—*Science Service*, 25c. A 16-page booklet giving detailed instructions for turning training and hobbies into dividends for Democracy. Amateur scientists of all ages will benefit from accurate listings of needed jobs and addresses. Essential technical jobs are now held by men and women who were once amateur scientists. Activities described should produce even more highly skilled scientific workers.

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EDUCATION

VOCATIONS FOR BOYS — Harry Dexter Kitson and Mary Rebecca Lingenfelter—*Harcourt, Brace*, 332 p., $2.50. A survey of many different fields by a member of the faculty of Teachers College, Columbia University, and an expert in vocational bibliography.

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SOCIOLOGY

THE SOCIAL LIFE OF A MODERN COMMUNITY—W. Lloyd Warner and Paul S. Lunt—*Yale Univ. Press*, 460 p., $4. This is the first of a six-volume series of studies by social anthropologists of a modern community in old New England. This volume tells the plan for the complete research and describes in detail the cultural life, including such details as the courses selected in high school by students from the different social classes, the library books they read and their newspaper purchases.

Science News Letter, June 13, 1942

PHOTOGRAPHY

KODACHROME AND KODACOLOR FROM ALL ANGLES — Fred Bond — *Camera Craft*, 232 p., illus., $6.50. A beautifully illustrated book of technical information for the amateur photographer.

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PUBLIC HEALTH

SO BUILD WE—Mary Sewall Gardner—*Macmillan*, 223 p., $2.25. An interesting book about public health nursing.

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PSYCHOLOGY

WAR, POLITICS AND EMOTION—Geoffrey Bourne — *Liveright Pub. Co.*, 110 p., $1.25. The author's thesis is that only by the control of emotion by reason can our civilization be saved, and that scientific thinking must be applied to politics, if our democracy is to be saved.

Science News Letter, June 13, 1942